

REMARKS

Claims 1-16, and 23-27 are pending in this application. The claims have been amended as discussed below. Claims 17-22 have been withdrawn.

35 U.S.C. §112, second paragraph

Claims 1 and 11

The Examiner rejected claims 1 and 11 under 35 U.S.C. §112, second paragraph, stating that the phrase "or other macromolecule" is indefinite. In order to expedite prosecution, the Applicant has amended claims 1 and 11 to remove the phrase "or other macromolecule".

The Examiner also rejected claims 1 and 11 under 35 U.S.C. §112, second paragraph, stating that the term "domain" is indefinite. Applicant respectfully asserts that the meaning of the term "domain" as it applies to amino acid sequences is well known to those of skill in the art. In particular, it is well known in the art that proteins comprise functional regions termed "domains". Examples include the starch binding domain and lipid binding domain of known proteins, such as the starch binding domain of glucoamylase of *Aspergillus niger*, and the oleosin hydrophobic binding domain described in the Examples. In the interest of expediting prosecution, the Applicant has amended claims 1 and 11 to replace the phrase "domain" with the phrase "sequence". Support for this amendment is found on page 3, lines 21-24 of the specification as filed.

Applicant submits that the amended claims 1 and 11, and claims dependent thereon, are not indefinite.

Claim 4

The Examiner contends that the term "enhanced ability" is vague and indefinite for "failing to specify/clarify the enhancement over what". Applicant asserts that the notion of the altered properties of the modified proteins being in comparison with those of unmodified proteins would be clear to the skilled artisan throughout the specification, for example on page 3, lines 5-10. However, in the interest of expediting prosecution, the Applicant has amended claim 4 to indicate that the enhancement is "when compared to said (unmodified) glutenin or seed-storage protein".

Applicant submits that the amended claim 4 is not indefinite.

Claim 6

The Examiner asserts that the term "lipid binding regions" in claim 6 is indefinite. Applicant has deleted the term "lipid binding regions" from claim 6.

Applicant submits that the amended claim 6 is not indefinite.

35 U.S.C. §103(a)

The Examiner rejected claims 1-4, 8-12, 15-16, 23-24 and 26-27 as being obvious over Anderson in view of Entwistle, et al. The Examiner states that Anderson teaches non-natural HMW glutenin subunits comprising an N-terminal domain including a cysteine residue that is capable of forming an intramolecular disulfide bond with another HMW glutenin subunit and a C-terminal domain, and the use of such a protein in bread making, noodle making etc. The Examiner further states that Entwistle teaches C-hordein genes from barley and, as a consequence, it would have been obvious at the time the invention was made to combine the methods disclosed by Anderson and Entwistle to modify dough elasticity with modified glutenins.

Applicant respectfully traverses this rejection. As pointed out by the Examiner, Anderson does not teach a barley HMW glutenin. Additionally, the modified proteins described by Anderson comprise a "plurality of HMW glutenin subunit repeats which are synthetic in sequence or non-natural in number" (see for example, claim 1 and the paragraph bridging pages 4 and 5 of Anderson). In contrast, as disclosed on page 3, lines 21 to 24 of the present specification, the exogenous amino acid sequences (domains) of the modified proteins of the invention are from proteins **other than glutenins**. To clarify this aspect of the invention, claims 1 and 11 have been amended to clearly indicate that the exogenous amino acid sequence is not from a glutenin. Claim 1 has been further amended for clarity by inserting the phrase "a glutenin or seed-storage" in front of "protein" on line 2.

There are three requirements to establish a *prima facie* case of obviousness: 1) there must be some suggestion or motivation, either in the references or in the knowledge generally available to

one of ordinary skill in the art, to modify the references or to combine the reference teachings; 2) there must be a reasonable expectation of success; and 3) the prior art reference must teach or suggest all the claim limitations. M.P.E.P §2143.

Anderson does not teach or suggest modifying glutenin where the modification does not include glutenin sequences. Combining Anderson with Entwistle does not provide the required teaching or suggestion of all the claim limitations. Applicant, therefore, respectfully submits that the present invention is not obvious over Anderson and Entwistle and requests that the Examiner withdraw this rejection.

Additional amendments to the claims

Claims 2-10, 12-15, 23-27 have been amended for clarity to replace the phrase "according to" with the term "of". Additionally, claims 12-15, 23 and 25 have been amended for clarity to replace the term "a" with the term "the" at the beginning of the claims as indicated.

Claims 2, 5-7, and 12-14 have been amended to replace the phrase "domain" with the phrase "exogenous amino acid sequence" for consistency with amended claim 1 and claim 11.

Claim 3 has been amended to correct dependency.

Claims 6 and 13 have been amended to replace the phrase "gene" with the phrase "protein" for consistency

Claims 8 and 15 have been amended for clarity and for grammatical correctness.

Claim 10 has been amended for clarity.

Claims 10 and 12 have been amended to remove the phrase "or other macromolecule". This amendment was made to conform claims 10 and 12 with amended claims 1 and 11.

Claim 13 has been amended to remove the term "lipid binding regions". This amendment was made for consistency with amended claim 6.

Claim 27 has been amended for clarity.

No new matter is added through the above amendments.


Applicant respectfully requests that the present amendments be entered and submits that the claims are now in condition for allowance. An early notification of such is requested.

The Examiner is invited to call the undersigned attorney for discussion of any outstanding issues.

Respectfully submitted,

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